

ABSTRACT OF THE DISCLOSURE

A multi-step process by which plant somatic embryos can be sown and germinated *ex vitro* using conventional seeding equipment, growing mixes, and plant propagation environments. The process most preferably comprises the steps of: placing a somatic embryo on or within a three-phase substrate, the phases comprising solid, liquid and gas phases, placing the substrate containing a somatic embryo into an environmentally-controlled plant-growing environment in which at least one environmental factor (i.e. moisture level within the three-phase substrate, atmospheric humidity, temperature, nutrients, ambient light intensity and diurnal photoperiod) may be controlled and manipulated, manipulating at least one of the environmental factors to enable and facilitate germination of the somatic embryo, and applying water and/or nutrient solutions at regular intervals, the intervals preferably ranging from 1 minute – 24 hours, to the surface of the substrate in the form of microdroplets, preferably for a period of time ranging between 3 to eight weeks, such that somatic embryo imbibition, germination, growth and development occur. The process can be practiced in non-sterile conditions with “naked” fresh and/or HRHT-treated and/or desiccated embryos, i.e., non-encapsulated or otherwise uncoated embryos, and does not require the use of aseptic techniques or sterilized media or equipment.